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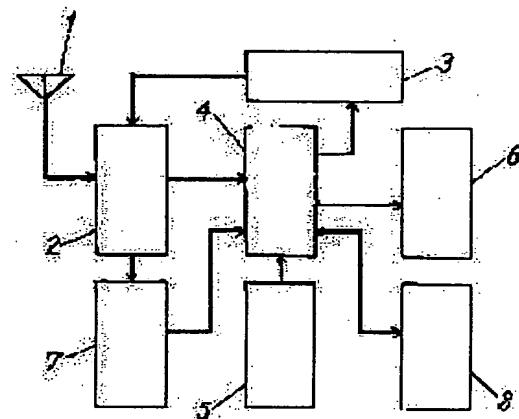
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## (54) UNIDIRECTIONAL RADIO RECEIVER

## (57)Abstract:

**PROBLEM TO BE SOLVED:** To surely fix a frequency through an original channel without increasing the cost of equipment and to enable stable communication by selecting and fixing the reception frequency of highest electric field strength among received signals at the allocated reception frequencies.

**SOLUTION:** A radio reception part 2 demodulates a received high frequency signal at the frequency designated by a reception channel setting part 3 and sends that signal to a data decoding part 4. A field strength measuring part 7 measures the field strength of the received signal and transmits that information to the data decoding part 4. At the data decoding part 4, equipment identification information set by an equipment identification information setting part 5 is compared with equipment identification information contained in the received signal and when that information shows the side of a communicating party, the measured field strength data are temporarily stored in a data storage part 8 together with that reception channel frequency. The reception channel setting part 3 designates and fixes the channel frequency of highest field strength in these data.



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**CLAIMS**

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**[Claim(s)]**

[Claim 1] The transmitter which repeats the information signal which chose one of frequencies as arbitration among two or more assigned channel frequencies, and added the instrument identification information on a receiver proper, and is transmitted, It is used for the simplex method wireless system which consists of a receiver which receives the radio signal to which the received frequency which was able to assign the radio signal of the channel frequency chosen as said arbitration transmitted from this transmitter was changed one by one, and the instrument identification information on said receiver proper was added. The field strength measurement means of the input signal in each received frequency, and a storage means to store temporarily the field strength of the input signal in each received frequency and each received frequency, The simplex method radio set which comes to have a setting means to choose the received frequency of the strongest field strength in the input signal in all the received received frequency that was assigned, and to fix.

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## DETAILED DESCRIPTION

## [Detailed Description of the Invention]

## [0001]

[Field of the Invention] This invention relates to the simplex method radio set in the radio communications system of the simplex method which gives a target data transmission from a transmitter side on the other hand to a receiver side.

## [0002]

[Description of the Prior Art] In transmitting and receiving data by the multi channel access method of a simplex method conventionally, it starts transmission on the unassigned channel frequency in some frequency channels which investigate the empty situation of a circuit first and are assigned by the transmitter side.

[0003] Moreover, after checking on which frequency in some frequency channels currently assigned in the receiver side it is transmitted, it is necessary to carry out reception standby on the frequency. How to prepare the frequency-control channel of dedication apart from some frequencies currently assigned as the approach, and to tell a receiver side about a communication channel, The instrument identification information on a proper is established between transmitter-receivers as indicated by JP,4-22292,A. A receiver changes a received frequency channel one by one, and it receives, and if the instrument identification information in an input signal judges it as the thing from the transmitter of a communications partner, the method of fixing to the channel frequency and continuing reception is learned.

[0004] Drawing 3 is the block diagram showing the configuration of such a conventional simplex method radio set, and, for a wireless receive section and 3, as for the data decode section and 5, the receiving channel setting section and 4 are [ 1 / a receiving antenna and 2 / the instrument identification information setting section and 6 ] output relays in drawing 3 .

[0005] Thus, noting that the frequencies assigned by the multi channel access method are five waves in the constituted conventional simplex method radio set In order to know on which frequency of the five waves the frequency channel which the receiver received was transmitted When the instrument identification information in the data first received on the lowest frequency of five waves checks whether it is the thing of the method of a communications partner and there is at the thing of the method of a communications partner, a frequency is further changed to a thing high one channel, and instrument identification information checks similarly whether it is the thing of the method of a communications partner. [ no ]

[0006] Thus, a channel frequency is changed to a high thing one by one, a check is repeated, and reception is continued after fixing received frequency to the channel frequency containing the instrument identification information on the method of a communications partner. Therefore, when the instrument identification information on the method of a communications partner was discovered, it was that to which received frequency will be fixed.

## [0007]

[Problem(s) to be Solved by the Invention] However, generally a receiver has the inclination for it to be higher than the frequency which it is originally going to receive by the frequency, such as an oscillation frequency of another oscillator which it has in the interior of a receiver, and a noise electric wave, or to receive a low signal wave according to the frequency-mixing

phenomenon generated with the amplifier inside a receiver.

[0008] For example, when the frequencies of five waves stated by the term of the conventional technique are 429.250MHz, 429.275MHz, 429.300MHz, 429.325MHz, and 429.350MHz, the receiving channel frequency changed so that a receiver may receive first may be 429.250MHz. And supposing the 0.050MHz source of an oscillation is located in the interior of a receiver or a 0.050MHz frequency noise enters from where, a receiver may judge the frequency of 429.300MHz higher 0.050MHz than 429.250MHz to be the frequency of 429.250MHz accidentally, and may receive.

[0009] That is, supposing the instrument identification information on the method of a communications partner is included in the 429.300MHz frequency The frequency of 429.250MHz which changed from the frequency which is 429.300MHz although it is feeble when received frequency is changed so that a receiver may receive 429.250MHz signalling frequency is received. It will judge that the instrument identification information included in this is the thing of the method of a communications partner, before detecting the original frequency of the stronger level of those two channels after, it will fix to another frequency, and originally it will communicate by the channel of weak electric-wave level different from a frequency.

[0010] The signalling frequency which is equivalent to channel spacing like 0.025MHz, 0.050MHz, 0.075MHz, and 0.100MHz like the above-mentioned example by the conventional approach thus, as the inside of the body of a device, or a noise When it exists in the neighborhood, frequencies other than an original communication link frequency are accidentally judged to be original communication link frequencies. The technical problem that unstable communication link actuation will be carried out on weak electric-wave level, and the shielding design which used the frequency filter etc. in order to eliminate this phenomenon on the other hand were needed, and it had the technical problem that a cost rise of equipment was caused.

[0011] This invention solves such a conventional technical problem, and it aims at offering the simplex method radio set which originally certainly fixed the frequency by the channel and enabled the stable communication link, without raising the cost of equipment.

[0012]

[Means for Solving the Problem] In order to solve this technical problem, the simplex method radio set by this invention is made the configuration equipped with a setting means to choose the received frequency of the highest field strength in the field strength measurement means of the input signal in each received frequency, a storage means to store temporarily the field strength of the input signal in each received frequency and each received frequency, and the input signal in all the received received frequency that was assigned, and to fix.

[0013] Since it is not influenced of the signalling frequency generated according to the frequency-mixing phenomenon in which field strength is smaller than an original channel frequency according to this this invention, there is no incorrect recognition of a communication channel and the simplex method radio set which can perform the communication link stabilized certainly at the strongest original communication channel of field strength is obtained.

[0014]

[Embodiment of the Invention] The transmitter which repeats the information signal which invention of this invention according to claim 1 chose one of frequencies as arbitration among two or more assigned channel frequencies, and added the instrument identification information on a receiver proper, and is transmitted, It is used for the simplex method wireless system which consists of a receiver which receives the radio signal to which the received frequency which was able to assign the radio signal of the channel frequency chosen as said arbitration transmitted from this transmitter was changed one by one, and the instrument identification information on said receiver proper was added. The field strength measurement means of the input signal in each received frequency, and a storage means to store temporarily the field strength of the input signal in each received frequency and each received frequency, It considers as the configuration equipped with a setting means to choose the received frequency of the strongest field strength in the input signal in all the received received frequency that was assigned, and to fix. Measure the field strength of the input signal of each received frequency for two or more received frequency of every which changes the assigned received frequency one by one, and is

received, and each received frequency and field strength of the input signal for every received frequency are memorized. The strongest received frequency of the field strength of an input signal is chosen in all the received allocation received frequency, and it has an operation that it is fixable as received frequency.

[0015] Hereafter, the gestalt of 1 operation of this invention is explained using drawing 1 and drawing 2. the block diagram having shown the basic configuration of a simplex method radio set [ in / in drawing 1 / the gestalt of this operation ] — it is — drawing 1 — setting — 1 — a receiving antenna and 2 — for the data decode section and 5, as for an output relay and 7, the instrument identification information setting section and 6 are [ a wireless receive section and 3 / the receiving channel setting section and 4 / a field strength test section and 8 ] the data storage sections.

[0016] A received high frequency signal reaches [ from a receiving antenna 1 ] the wireless receive section 2, and the wireless receive section 2 restores to said received high frequency signal after signal processing on the frequency which the receiving channel setting section 3 specifies, and sends to the data decode section 4. On the other hand, said received high frequency signal measures field strength in the frequency which the receiving channel setting section 3 specifies, and the field strength test section 7 transmits the information to the data decode section 4. In the data decode section 4, the instrument identification information set as the instrument identification information setting section 5 is compared with the instrument identification information included in a received RF signal, it judges whether it is the thing of the method of a communications partner, and the field strength data measured when it was the thing of the method of a communications partner are stored temporarily in the data storage section 8 with the receiving channel frequency.

[0017] About all the frequencies assigned as a communication channel between transmitter-receivers, the receiving channel setting section 3 stores temporarily similarly the field strength data measured for said every receiving channel frequency in the data storage section 8 with the receiving channel frequency, changing a frequency one by one. If the field strength data about said all receiving channel frequencies are memorized, in these, the receiving channel setting section 3 specifies said channel frequency with the strongest field strength, and is fixed. All the receiving mechanism signals transmitted henceforth are received on said this fixed channel frequency.

[0018] In addition, although, as for a receiving mechanism signal, that in which instrument identification information was included constitutes one data frame and this data frame is repeatedly transmitted from a transmitter, if instrument identification information is no longer received, the channel fixed receive state of a receiver will start actuation of it being canceled and looking for a receiving channel again.

[0019] Since according to this invention it is not influenced of the signalling frequency generated according to the frequency-mixing phenomenon in which field strength is smaller than the input signal of original received frequency even if it does not carry out the shielding design using the frequency filter which causes a cost rise of equipment, there is no incorrect recognition of a communication channel and the effectiveness that the communication link which was trustworthy and was stabilized in the strongest original communication channel of field strength can be performed is acquired.

[0020] In addition, although drawing 2 is the block diagram showing the detailed configuration of the simplex method radio set in the gestalt of the above-mentioned implementation and explanation of the sign which overlaps drawing 1 is omitted In drawing 2 9 a RF amplifying circuit and 11 for a filter and 10 The 1st mixing circuit, 12 an intermediate frequency amplifying circuit and 14 for the 1st intermediate frequency filter and 13 The 2nd mixing circuit, The PLL frequency synthesizer section and 16 15 The 1st local oscillator (VCO), A phase comparator and a low pass filter (LPF), and 18 17 A reference-frequency oscillator-cum-the 2nd local oscillator, 19 low-frequency amplifier and 21 for the 2nd intermediate frequency filter and 20 An FM demodulator, 22 the clock for microcomputers, and 24 for a received field strength measurement means and 23 A channel setter, 25 — the instrument identification information setting section and 26 — for the crystal oscillator for MSK demodulators, and 29, as for a display and 31, the

comparison test section and 30 are [ the received frequency setting section and 27 / a MSK demodulator and 28 / a relay output circuit and 32 ] the microcomputer sections. In addition, the received frequency setting section 26, the data decode section 4, and comparison test section 29. grade consist of the microcomputer sections 32, and the PLL frequency synthesizer section 15 consists of the 1st local oscillator (VCO) 16, a phase comparator, and LPF17.

[0021] A received RF signal goes into a filter 9 from a receiving antenna 1, and RF magnification is carried out in the RF amplifying circuit 10. This signal is mixed by the local oscillation frequency made from the PLL frequency synthesizer section 15 in the 1st mixing circuit 11, and is changed into the 1st intermediate frequency. Intermediate frequency magnification is carried out through the 1st intermediate frequency filter 12 in the intermediate frequency amplifying circuit 13, and frequency conversion of this 1st intermediate frequency signal is carried out further in the 2nd mixing circuit 14, and it turns into the 2nd intermediate frequency signal. After low frequency magnification of said 2nd intermediate frequency signal is carried out with low-frequency amplifier 20 through the 2nd intermediate frequency filter 19, it is inputted into the received field strength measurement means 22, and field strength measurement by the current channel is performed.

[0022] Furthermore, after FM recovery of said signal by which low frequency magnification was carried out is carried out with FM demodulator 21, the comparison test of the instrument identification information in which got over with the MSK demodulator 27 and data decode was carried out by the data decode section 4 in the microcomputer section 32 and which was set up in the instrument identification information setting section 25, and the instrument identification information in decode data is carried out in the comparison test section 29. As a result of a comparison test, if both instrument identification information is in agreement, the data storage section 8 will memorize with received field strength data, and received frequency information will change a delivery received frequency channel from the received frequency setting section 26 to the PLL frequency synthesizer section 15 further.

[0023] Coincidence of instrument identification information is checked about all the assigned frequency channels by the same approach, the received frequency channel which corresponded, and its received field strength data are memorized in the data storage section 8, and received frequency setting information is sent to the PLL frequency synthesizer section 15 from the received frequency setting section 26 so that it may fix to the strongest frequency channel of receiver field strength and may receive. Thus, while the data signal received by the fixed frequency channel checks instrument identification information, the relay output circuit 31 is controlled.

[0024] In addition, the channel setter 24 can set up the group of an assigned frequency channel, or can set him as the fixed channel which does not carry out a multi channel access. The group setting of an assigned frequency channel means setting up the code assigned to each group, when dividing and assigning a number group all usable frequency channels, for example. Since this will require time amount too much if the multi channel access of not much many frequency channels is carried out, it is made to carry out the multi channel access only of the frequency channel in the group by dividing into the group in every several channels, and setting up the group code. Moreover, a display 30 is for displaying the output state of a receiver etc.

[0025] In addition, although the MSK recovery of what carried out FM recovery was carried out further and it has inputted into the data decode section 4 with the gestalt of this operation since the MSK modulation technique was adopted, if the FSK modulation technique etc. is adopted, what carried out FM recovery can be inputted into the immediate-data decode section 4, and it is possible to acquire the same effectiveness.

[0026]

[Effect of the Invention] The simplex method radio set by this invention as mentioned above The field strength measurement means of the input signal in each received frequency, and a storage means to store temporarily the field strength of the input signal in each received frequency and each received frequency, By considering as the configuration equipped with a setting means to choose the received frequency of the highest field strength in the input signal in all the received received frequency that was assigned, and to fix Since it is not influenced of the signalling

frequency generated according to the frequency-mixing phenomenon in which field strength is smaller than the input signal of original received frequency even if it does not carry out the shielding design using the frequency filter which causes a cost rise of equipment There is no incorrect recognition of a communication channel and the effectiveness that the communication link which was trustworthy and was stabilized in the strongest original communication channel of field strength can be performed is acquired.

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**DESCRIPTION OF DRAWINGS**

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**[Brief Description of the Drawings]**

[Drawing 1] The block diagram showing the basic configuration of the simplex method radio set in the gestalt of 1 operation of this invention

[Drawing 2] The block diagram showing the detailed configuration of the simplex method radio set in the gestalt 1 of this operation

[Drawing 3] The block diagram showing the configuration of the simplex method radio set of the conventional example

**[Description of Notations]**

1 Receiving Antenna

2 Wireless Receive Section

3 Receiving Channel Setting Section

4 Data Decode Section

5 Instrument Identification Information Setting Section

6 Output Relay

7 Field Strength Test Section

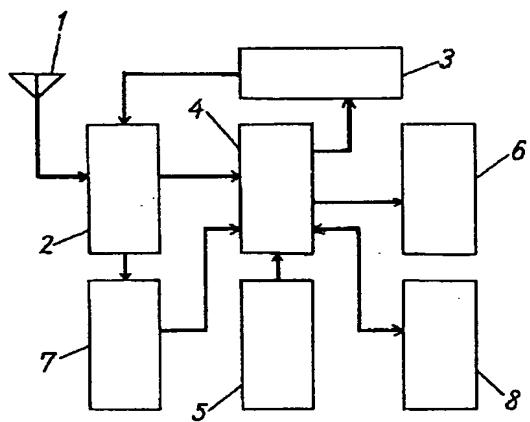
8 Data Storage Section

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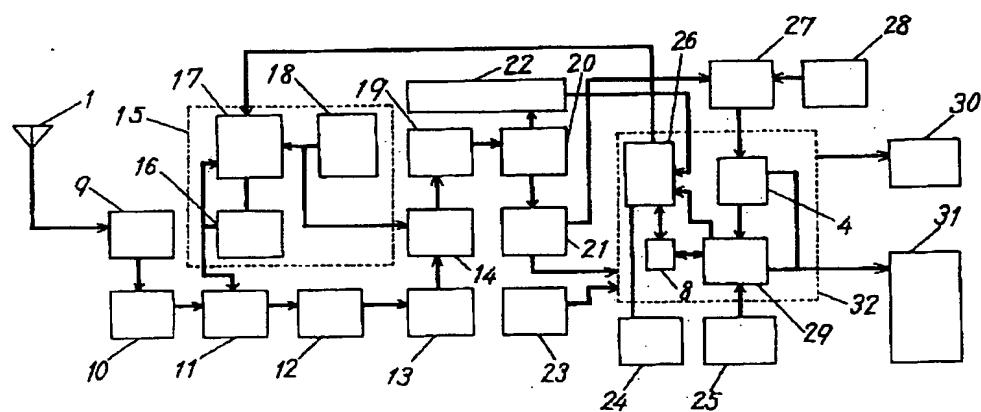
## Drawing selection drawing 1

- 1 受信アンテナ
- 2 無線受信部
- 3 受信チャンネル設定部
- 4 データ解読部
- 5 機器識別情報設定部
- 6 出力リレー
- 7 電界強度測定部
- 8 データ記憶部



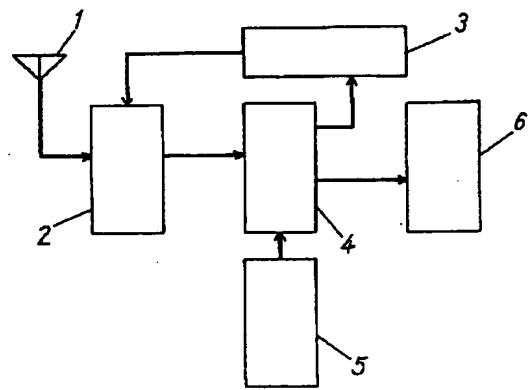
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## Drawing selection drawing 2



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## Drawing selection | drawing 3



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H 04 Q	9/00	301	H 04 Q	9/00
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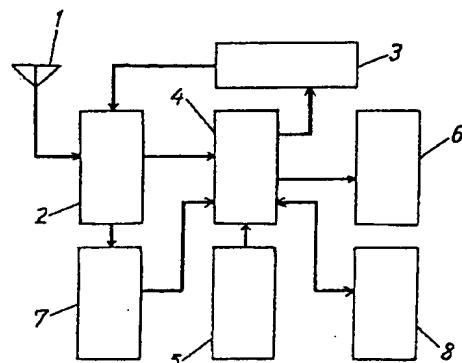
(54)【発明の名称】 単向方式無線受信機

(57)【要約】

【課題】 固有の機器識別情報を付加して所定の送信チャンネル周波数で繰り返し送信する送信機の信号を受信する単向方式無線受信機において、装置のコストを上昇させること無く確実に本来チャンネルで周波数を固定し、安定した通信を可能とした単向方式無線受信機を提供することを目的とする。

【解決手段】 受信機に受信信号の電界強度測定手段を備え、機器識別情報を含む信号が受信された受信チャンネル周波数とその電界強度を測定記憶し、最も強い電界強度の受信チャンネル周波数に固定して受信することにより確実なチャンネル設定ができる。

- 1 受信アンテナ
- 2 無線受信部
- 3 受信チャンネル設定部
- 4 データ解読部
- 5 機器識別情報設定部
- 6 出力リレー
- 7 電界強度測定部
- 8 データ記憶部



## 【特許請求の範囲】

【請求項1】 割当てられた複数のチャンネル周波数の内いずれかの周波数を任意に選択して受信機固有の機器識別情報を付加した情報信号を繰り返し送信する送信機と、この送信機から送信される前記任意に選択されたチャンネル周波数の無線信号を割当てられた受信周波数を順次切り替えて前記受信機固有の機器識別情報が付加された無線信号を受信する受信機からなる単向方式無線システムに使用され、各受信周波数での受信信号の電界強度測定手段と、各受信周波数及び各受信周波数での受信信号の電界強度を一時記憶する記憶手段と、受信した全ての割当てられた受信周波数での受信信号の中で最も強い電界強度の受信周波数を選択して固定する設定手段を備えてなる単向方式無線受信機。

## 【発明の詳細な説明】

## 【0001】

【発明の属する技術分野】 本発明は、送信機側より受信機側へ一方的にデータ送信を行う単向方式の無線通信システムに於ける単向方式無線受信機に関するものである。

## 【0002】

【従来の技術】 従来、単向方式のマルチチャンネルアクセス方式でデータを送受信する場合には、送信機側でまず回線の空き状況を調べて割り当てられている幾つかの周波数チャンネルの中の空きチャンネル周波数で送信を開始する。

【0003】 また、受信機側では割り当てられている幾つかの周波数チャンネルの中のどの周波数で送信されてくるかを確認した上でその周波数で受信待機する必要があり、その方法として割り当てられている幾つかの周波数とは別に専用の周波数制御チャンネルを設けて受信機側に通信チャンネルを知らせる方法と、特開平4-22292号公報に開示されているように送受信機間で固有の機器識別情報を設け、受信機が受信周波数チャンネルを順次切り替えて受信し、受信信号中の機器識別情報が通信相手の送信機からのものと判断するとそのチャンネル周波数に固定して受信を継続するという方法が知られている。

【0004】 図3は、このような従来の単向方式無線受信機の構成を示すブロック図であり、図3において、1は受信アンテナ、2は無線受信部、3は受信チャンネル設定部、4はデータ解読部、5は機器識別情報設定部、6は出力リレーである。

【0005】 このように構成された従来の単向方式無線受信機において、例えばマルチチャンネルアクセス方式で割当てられた周波数が5波であるとして、受信機が受信した周波数チャンネルが5波の内のどの周波数で送信されたかを知るために、まず5波の最下位周波数で受信したデータの中の機器識別情報が通信相手方のものかどうかを確認し、通信相手方のものでは無い場合は更に

周波数を1チャンネル高いものに切り替えて同様に機器識別情報が通信相手方のものかどうかを確認する。

【0006】 このように順次チャンネル周波数を高いものに切り替えて確認を繰り返し、通信相手方の機器識別情報が入っていたチャンネル周波数に受信周波数を固定して以降の受信を続けるものである。従って通信相手方の機器識別情報を発見した時点で受信周波数が固定されることになるものであった。

## 【0007】

10 【発明が解決しようとする課題】 しかしながら、一般に受信機は受信機内部の増幅器で発生する周波数混合現象により、本来受信しようとする周波数より受信機内部に持つ別の発振器の発振周波数やノイズ電波等の周波数分だけ高いか、又は低い信号電波を受信してしまう傾向がある。

【0008】 例えば従来技術の項で述べた5波の周波数が429.250MHz, 429.275MHz, 429.300MHz, 429.325MHz, 429.350MHzの場合に、受信機が最初に受信するべく切り替えた受信

20 チャンネル周波数が429.250MHzとする。かつ受信機内部に0.050MHzの発振源があるか0.050MHzの周波数ノイズがどこからか入ってくるとすると、受信機が429.250MHzより0.050MHz高い429.300MHzの周波数を429.250MHzの周波数と誤って判断し、受信してしまう可能性がある。

【0009】 つまり通信相手方の機器識別情報が429.300MHz周波数の中に含まれているとすると、受信機は429.250MHzの周波数信号を受信するべく受信周波数を切り替えた時に微弱ではあるが429.300MHzの周波数から変化した429.250MHzの周波数を受信し、この中に含まれる機器識別情報を通信相手方のものであると判定してしまうことになり、その2チャンネル後のより強いレベルの本来の周波数を検出する前に別の周波数に固定てしまい、本来周波数とは別の弱い電波レベルのチャンネルで通信することになる。

【0010】 このように従来の方法では上記の例の如く0.025MHz, 0.050MHz, 0.075MHz, 0.100MHzのようなチャンネル間隔に相当する周波数信号が機器本体内やノイズとして近辺に存在する場合に本来の通信周波数以外の周波数を誤って本来の通信周波数と判断して、弱い電波レベルで不安定な通信動作をしてしまうという課題と、一方この現象を排除するためには周波数フィルタ等を用いたシールド設計が必要となり、装置のコスト上昇を招くという課題を有していた。

【0011】 本発明はこのような従来の課題を解決し、装置のコストを上昇させること無く確実に本来チャンネルで周波数を固定し、安定した通信を可能とした単向方式無線受信機を提供することを目的とするものである。

## 【0012】

【課題を解決するための手段】 この課題を解決するため

に本発明による単向方式無線受信機は、各受信周波数での受信信号の電界強度測定手段と、各受信周波数及び各受信周波数での受信信号の電界強度を一時記憶する記憶手段と、受信した全ての割当てられた受信周波数での受信信号の中で最も高い電界強度の受信周波数を選択して固定する設定手段を備えた構成にしたものである。

【0013】この本発明によれば、本来のチャンネル周波数より電界強度が小さい周波数混合現象により発生する周波数信号の影響を受けないので、通信チャンネルの誤認識が無く、電界強度の最も強い本来の通信チャンネルで確実にかつ安定した通信ができる単向方式無線受信機が得られる。

【0014】

【発明の実施の形態】本発明の請求項1に記載の発明は、割当てられた複数のチャンネル周波数の内いずれかの周波数を任意に選択して受信機固有の機器識別情報を付加した情報信号を繰り返し送信する送信機と、この送信機から送信される前記任意に選択されたチャンネル周波数の無線信号を割当てられた受信周波数を順次切り替えて前記受信機固有の機器識別情報が付加された無線信号を受信する受信機からなる単向方式無線システムに使用され、各受信周波数での受信信号の電界強度測定手段と、各受信周波数及び各受信周波数での受信信号の電界強度を一時記憶する記憶手段と、受信した全ての割当てられた受信周波数での受信信号の中で最も高い電界強度の受信周波数を選択して固定する設定手段を備えた構成としたものであり、割当てられた受信周波数を順次切り替えて受信する複数の受信周波数毎に各々の受信周波数の受信信号の電界強度を測定し、かつ各々の受信周波数と受信周波数毎の受信信号の電界強度を記憶して、受信した全ての割当て受信周波数の中で受信信号の電界強度の最も高い受信周波数を選択しつつ受信周波数として固定することができるという作用を有する。

【0015】以下、本発明の一実施の形態について図1、図2を用いて説明する。図1は同実施の形態における単向方式無線受信機の基本構成を示したブロック図であり、図1において、1は受信アンテナ、2は無線受信部、3は受信チャンネル設定部、4はデータ解読部、5は機器識別情報設定部、6は出力リレー、7は電界強度測定部、8はデータ記憶部である。

【0016】受信高周波信号は受信アンテナ1から無線受信部2に至り、無線受信部2は受信チャンネル設定部3の指定する周波数で前記受信高周波信号を信号処理後復調してデータ解読部4に送る。一方、電界強度測定部7は前記受信高周波信号が受信チャンネル設定部3の指定する周波数において電界強度を測定し、その情報をデータ解読部4に伝達する。データ解読部4では機器識別情報設定部5に設定されている機器識別情報と受信高周波信号に含まれる機器識別情報を比較して通信相手方のものか否かを判定し、通信相手方のものであれば測定し

た電界強度データをその受信チャンネル周波数と共にデータ記憶部8で一時記憶する。

【0017】同様にして受信チャンネル設定部3は送受信機間の通信チャンネルとして割当てられた全ての周波数について、順次周波数の切替えを行いながら前記受信チャンネル周波数毎に測定した電界強度データをその受信チャンネル周波数と共にデータ記憶部8で一時記憶する。全ての前記受信チャンネル周波数についての電界強度データが記憶されたら、受信チャンネル設定部3はこれらの中で最も電界強度の強い前記チャンネル周波数を指定して固定する。以後送信されてくる受信機制御信号は全てこの固定された前記チャンネル周波数で受信される。

【0018】なお、受信機制御信号は機器識別情報が含まれたものが一つのデータフレームを構成しており、このデータフレームが送信機より繰り返し送信されてくるが、機器識別情報が受信されなくなると受信機のチャンネル固定受信状態は解除され再び受信チャンネルを探す操作に入る。

【0019】本発明によれば、装置のコスト上昇を招く周波数フィルタ等を用いたシールド設計を実施しなくとも本来の受信周波数の受信信号より電界強度が小さい周波数混合現象により発生する周波数信号の影響を受けないので、通信チャンネルの誤認識が無く、電界強度の最も強い本来の通信チャンネルで確実にかつ安定した通信ができるという効果が得られる。

【0020】なお、図2は上記実施の形態における単向方式無線受信機の詳細な構成を示すブロック図であり、図1と重複する符号の説明は省くが、図2において、9はフィルタ、10は高周波増幅回路、11は第1混合回路、12は第1中間周波数フィルタ、13は中間周波増幅回路、14は第2混合回路、15はPLL周波数シンセサイザ部、16は第1局部発振器(VCO)、17は位相比較器及びローパスフィルタ(LPF)、18は参照周波数発振器兼第2局部発振器、19は第2中間周波数フィルタ、20は低周波増幅器、21はFM復調器、22は受信電界強度測定手段、23はマイコン用クロック、24はチャンネル設定器、25は機器識別情報設定部、26は受信周波数設定部、27はMSK復調器、28はMSK復調器用水晶発振器、29は比較判定部、30は表示部、31はリレー出力回路、32はマイコン部である。なお、受信周波数設定部26やデータ解読部4及び比較判定部29等はマイコン部32で構成されており、PLL周波数シンセサイザ部15は第1局部発振器(VCO)16と位相比較器及びLPF17で構成されている。

【0021】受信高周波信号は受信アンテナ1からフィルタ9に入り高周波増幅回路10で高周波増幅される。この信号がPLL周波数シンセサイザ部15で作られた局部発振周波数により第1混合回路11でミキシング

され第1中間周波数に変換される。この第1中間周波数信号が第1中間周波数フィルタ12を介して中間周波数增幅回路13で中間周波数増幅され、更に第2混合回路14で周波数交換され第2中間周波数信号となる。前記第2中間周波数信号は第2中間周波数フィルタ19を介して低周波増幅器20で低周波増幅された後、受信電界強度測定手段22に入力され、現在チャンネルでの電界強度測定が行われる。

【0022】更に前記低周波増幅された信号がFM復調器21でFM復調された後、MSK復調器27で復調されマイコン部32内のデータ解読部4によりデータ解読され機器識別情報設定部25で設定された機器識別情報と解読データ中の機器識別情報が比較判定部29で比較判定される。比較判定の結果、両者の機器識別情報が一致していれば受信電界強度データと共にデータ記憶部8に記憶され、更に受信周波数設定部26からPLL周波数シンセサイザ部15に受信周波数情報を送り受信周波数チャンネルを変化させる。

【0023】同様の方法で割当て周波数チャンネルの全てについて機器識別情報の一一致を確認し、機器識別情報の一一致した受信周波数チャンネルとその受信電界強度データをデータ記憶部8に記憶し、受信機電界強度の最も強い周波数チャンネルに固定して受信するように受信周波数設定部26からPLL周波数シンセサイザ部15に受信周波数設定情報を送る。この様にして固定された周波数チャンネルで受信されたデータ信号が機器識別情報の確認をしながらリレー出力回路31の制御を行うものである。

【0024】尚、チャンネル設定器24は割当て周波数チャンネルのグループを設定したり、マルチチャンネルアクセスしない固定チャンネルに設定することができる。割当て周波数チャンネルのグループ設定とは、例えば使用可能な全ての周波数チャンネルを数グループに分けて割当てる場合に各グループに割当てたコードを設定することをいう。これはあまり多くの周波数チャンネルをマルチチャンネルアクセスすると時間が掛かりすぎるため、数チャンネル毎のグループに分けてそのグループコードを設定することにより、そのグループ内の周波数

チャンネルのみをマルチチャンネルアクセスするようにしたものである。また、表示部30は受信機の出力状態等を表示するためのものである。

【0025】なお、本実施の形態ではMSK変調方式を採用したのでFM復調したものを更にMSK復調してデータ解読部4に入力しているが、FSK変調方式等を採用すればFM復調したものを直接データ解読部4に入力することができ、同様の効果を得ることが可能である。

【0026】

10 【発明の効果】以上のように本発明による単向方式無線受信機は、各受信周波数での受信信号の電界強度測定手段と、各受信周波数及び各受信周波数での受信信号の電界強度を一時記憶する記憶手段と、受信した全ての割当てられた受信周波数での受信信号の中で最も高い電界強度の受信周波数を選択して固定する設定手段を備えた構成とすることにより、装置のコスト上昇を招く周波数フィルタ等を用いたシールド設計を実施しなくとも本来の受信周波数の受信信号より電界強度が小さい周波数混合現象により発生する周波数信号の影響を受けないので、通信チャンネルの誤認識が無く、電界強度の最も強い本来の通信チャンネルで確実でかつ安定した通信ができるという効果が得られる。

【図面の簡単な説明】

【図1】本発明の一実施の形態における単向方式無線受信機の基本構成を示すブロック図

【図2】同実施の形態1における単向方式無線受信機の詳細な構成を示すブロック図

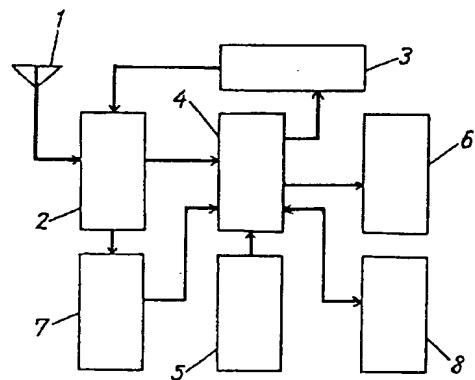
【図3】従来例の単向方式無線受信機の構成を示すブロック図

【符号の説明】

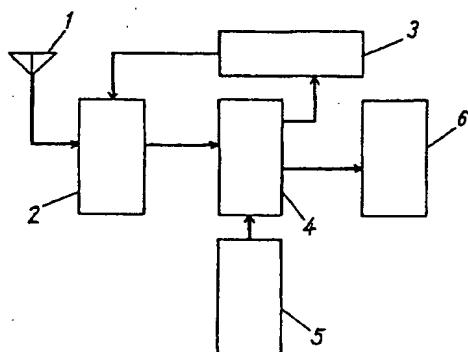
- 1 受信アンテナ
- 2 無線受信部
- 3 受信チャンネル設定部
- 4 データ解読部
- 5 機器識別情報設定部
- 6 出力リレー
- 7 電界強度測定部
- 8 データ記憶部

【図1】

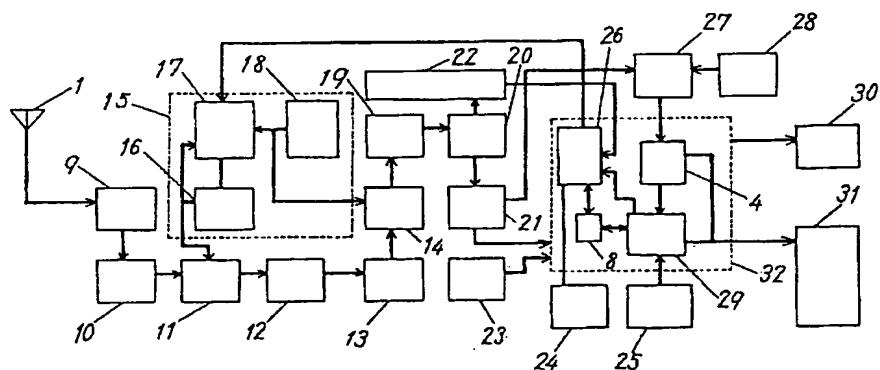
- 1 受信アンテナ
- 2 無線受信部
- 3 受信チャンネル設定部
- 4 データ解読部
- 5 機器識別情報設定部
- 6 出力リレー
- 7 電界強度測定部
- 8 データ記憶部



【図3】



【図2】



フロントページの続き

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